

VAPOR GROWTH METHOD

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Abstract

PURPOSE: To prevent carbon contamination when organic metal material gas is used by introducing gas made of hydroxide into a reaction tube before material gas of silicon is introduced when organic compound is used as the material gas and an Si-Ge mixed crystal is grown by an atomic layer epitaxy method.

CONSTITUTION: A silicon substrate 14 is placed on a susceptor 12 in a reaction tube 1, the substrate 14 is heated to 900 deg.C, and a spontaneous oxide film on the surface is removed. A temperature of the susceptor 12 is set to 390 deg.C, diethylgermanium (DEGe) is introduced into the tube 1, and a Ge layer is grown on the substrate 14. The introduction of the DEGe is stopped, the DEGe in the tube 1 is discharged, the temperature of the susceptor 12 is set to 450 deg.C, and AsH₃ is introduced. After the AsH₃ in the tube 1 is discharged, the temperature of the susceptor 12 is raised to 530 deg.C, Si₂H₆ is introduced, and an Si layer is grown on the substrate 14. Thereafter, the above steps are similarly repeated to grow an Si-Ge crystalline layer.